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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,266	12/03/2003	Gerald Laib	84,374	3264

7590 12/06/2006

Office of Counsel Code OC4
Naval Surface Warfare Center
Indian Head Division
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EXAMINER

CLEMENT, MICHELLE RENEE

ART UNIT PAPER NUMBER

3641

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/729,266	Applicant(s) LAIB, GERALD	
	Examiner Michelle (Shelley) Clement	Art Unit 3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 9/20/06 have been fully considered but they are not persuasive. With regards to applicant's arguments that Tapphorn et al. does not disclose aspects of applicant's invention, it is noted that applicant's arguments are narrower than the present broadly claimed method and applicant appears to mischaracterize the Tapphorn et al. invention and appears to narrowly construe the reference. Tapphorn et al. discloses the method of depositing a metal layer on a substrate layer, it is inherent that the substrate layer must be "formed" (it is noted that applicant has not claimed how the substrate layer is formed and the fact that Tapphorn et al. discloses the substrate layer existing means that the substrate layer was *formed*). Applicant discloses at page 4 of the present specification that the metal substrate 12 may be formed by "plasma vapor deposition, chemical vapor deposition or sputtering". Applicant has not disclosed that the claimed "in-situ" process is any other than well known processes of depositions and claim 5 states that the "depositing in-situ" includes depositing by "plasma vapor deposition, chemical vapor deposition, electroplating, sputtering and sintering". Furthermore, Tapphorn et al. specifically discloses that the process effects chemical reaction rates for controlling the properties of the metal matrix composite formed during in-situ fabrication. The metals that Tapphorn et al. discloses as being deposited on the surface, aluminum, nickel, tungsten are all transitional metals and ARE cations. The metal layer is reacted with an oxide, which will form an explosive layer. It is further noted that applicant's method does not require the steps be performed in any particular sequence outside of what is inherently required. It is irrelevant that the oxygen is injected into the pores rather than

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chemically reacted as applicant may envision, in that the claims merely require “reacting” the metal layer. It is irrelevant that the invention of Tappehorn et al. may be different or may be for a different purpose than the invention envisioned by the applicant, it is the claims that determine the scope of the invention and Tappehorn et al. discloses the claimed invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Tapphorn et al. (US Patent # 6,915,964). Tapphorn et al. discloses a method comprising forming a substrate layer (the fact that the substrate layer exists means that it was somehow formed) and in situ deposition of a metal layer on the substrate layer along with reactive materials to create an explosive mixture (column 13, lines 29-40). The substrate comprising silicon, the metal layer may comprise copper and may be reacted with a gas phase reactant. The metal layer may be deposited by sputtering.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tapphorn et al. as applied to claim 1 above, and further in view of Garvick et al. (US Patent # 6,173,650).

Although Tapphorn et al. does not expressly disclose the method also comprising depositing an organic flyer layer on top of the primary explosive layer or forming a barrel in the substrate layer, Garvick et al. does. Garvick et al. teaches a method of making exploding foil initiator utilizing a substrate having a primary explosive formed thereon comprising depositing an organic flyer layer on top of the primary explosive layer and forming a barrel in the substrate layer.

Garvick et al. and Tapphorn et al. are analogous art because they are from similar problem solving areas: microminiaturized devices. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of depositing a flyer and forming a barrel in the substrate as taught by Garvick et al. with the method of forming a substrate and in situ deposition of metals and reacting the metals to form an explosive layer as taught by Tapphorn et al. The suggestion/motivation for doing so would have been to obtain a MEMS safety and arming system that was easier to manufacture as suggested by Tapphorn et al.

6. Claims 1 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baginski et al. (US Patent # 6,722,692) in view of Hee Cheul Choi et al. (Positive and negative photopatterning of metal oxides on silicon via bipolar electrochemical deposition) hereafter Choi et al. Baginski et al. discloses an explosive device formed by depositing a metal layer of a cation (i.e. a transition metal) on a substrate layer and reacting the metal layer to form an explosive layer. The explosive layer is comprised of an explosive salt with a predetermined thickness. Baginski et al. specifically discloses the explosive layer of nickel azide but discloses that the

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choices of metals may vary depending on desired output. Baginski et al. further discloses that the metal layer may be deposited on the substrate by any known deposition method. Although Baginski et al. does not specifically disclose the method of depositing the metal layer on the substrate by an "in-situ" method, Choi et al. does. Choi et al. teaches various in-situ deposition methods for depositing metal layers on substrates. Baginski et al. and Choi et al. are analogous art because they are from the same field of endeavor: thin film deposition. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the in-situ deposition methods for metal layers on substrates as suggested by Choi et al. with the explosive device as suggested by Baginski et al. The suggestion/motivation for doing so would have been to obtain an explosive device using a known deposition method as suggested by Baginski et al. Baginski et al. and Choi et al. disclose the claimed invention except for expressly stating the specific explosive of copper azide and the specific amount of explosive being no more than 10 milligrams. Therefor, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the specific explosive in the specific amount, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art and applicant has not state that the specific explosive or the specific amount is a criticality of the present invention. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle (Shelley) Clement whose telephone number is 571.272.6884. The examiner can normally be reached on Monday thru Thursday 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 571.272.6873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


MICHELLE CLEMENT
PRIMARY EXAMINER